Proceedings of the American Academy of Arts and Sciences

Vol. 73. No. 9, P. 259–269—May, 1940

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Received: June 6, 1939 Presented: May 10, 1939

1. Fossil Species

In 1923 the present writer published a description of a single species of this family from the Baltic Amber.[1]

Later, I received as a loan from the Geological Museum of the University of Königsberg an additional series of specimens and the Haren Collection of amber insects recently acquired by the Museum of Comparative Zoölogy contains also several species of this family. A study of all this material has enabled me to distinguish six clearly defined species, in addition to several others of dubious status that cannot be completely examined on account of unsatisfactory preservation.

In the living fauna the family Serphidae is nearly cosmopolitan, represented by a rather small number of species in a series of genera which are in the main very closely similar to one another. Two Australian genera depart from this general type in possessing a much less reduced wing venation which demonstrates very clearly their more primitive character and a third one from Formosa described in the present paper is also an aberrant form.

It might be expected that the amber fauna would include some primitive types, but this is not the case as all the species are of very ordinary form. Several of the genera as at present recognized are separable on only very slight characters and all of the amber species fall quite readily into one of these. This is *Cryptoserphus* Kieffer, characterized mainly by the extremely short abdominal petiole, and I have referred all of those described in the present paper to this genus. *Serphus cellularis* Brues, known only from the male has a much longer stigma and may not be congeneric. The females may be distinguished by the following key.

[1] Proc. American Acad. Arts & Sci., vol. 58, p. 344.

Key to the amber Species of Cryptoserphus

1. Penultimate joint of antennae one and one-half to two times as long as thick ..... 2.
   Penultimate joint of antenna quadrate or slightly transverse ..... 3.
2. Body, legs, and antennae extremely long and slender; penultimate joint of antennae fully twice as long as wide ..... *gracilis* sp. nov.
   Body, legs, and antennae not extremely slender; penultimate joint of antennae shorter, not more than one-half longer than wide; radial cell large *pinorum* sp. nov.
3. Radial cell very small, elongate oval *obsolescens* sp. nov.
   Radial cell larger, triangular, with a well developed upper side along the costa ..... 4.
4. Cauda straight at base, the apical third curved, sharply so at the apex ..... *hamiferus* sp. nov.
   Cauda quite evenly curved throughout its entire length ..... 5.
5. Propleura striate; cauda more than three times as long as wide at base ..... *tertiarius* sp. nov.
   Propleura smooth; cauda less than three times as long as wide at base ..... *succinalis* sp. nov.

Cryptoserphus gracilis sp. nov.

(Fig. 1, *a*)

♀. Length 4.3 mm., the abdomen greatly extended, so that the length in life was nearer 3.8 mm.; cauda long and slender, about 0.5 mm. in length; antenna 1.7 mm. Color apparently black or very dark with the four anterior legs paler apically. Head small, very strongly narrowed below the eyes so that it appears transversely oval when seen from the front; malar space long, apparently without a furrow; eyes strongly protuberant, bare, about half as high as the head. Antennae very long and slender, not thickened apically; first three flagellar joints subequal; if anything, the first is slightly shorter; second joint almost four times as long as thick and very slightly thickened toward the apex;

penultimate joint twice as long as thick. Ocelli large, in a small triangle. Surface of head smooth, impunctate throughout. Thorax long and slender, almost three times as long as wide at the tegulae (56 : 20); propodeum long, gradually attenuated apically. Legs long, very thin, especially the hind pair and all of the tarsi; apical joint of the four anterior tarsi very slightly swollen, their claws simple, without basal tooth. Abdomen long and narrow; the cauda slender, of even width throughout its length, one and one-quarter times as thick as the basal joints of the antennal flagellum and apparently gently curved, although not visible in direct lateral view. Wings preserved only in part, the neuration not visible in the type.

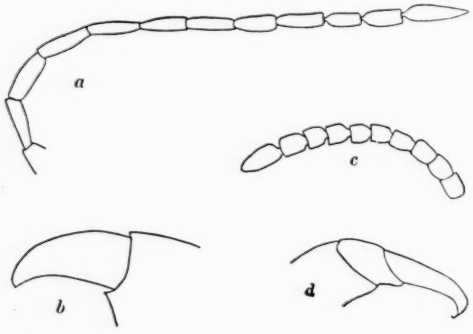

FIGURE 1. *a, Cryptoserphus gracilis* sp. nov., antenna; *b, Cryptoserphus tertiarus* sp. nov., cauda; *c, Cryptoserphus hamiferus* sp. nov., antenna; *d. Cryptoserphus hamiferus* sp. nov., cauda.

Type: No. 11,024, Collection of the Königsberg Museum.

Although not completely preserved, this species is readily distinguishable from the other amber forms by its remarkably slender body, legs, antennae and cauda.

Cryptoserphus pinorum sp. nov.

(Fig. 2)

♀. Length 2.5 mm. in normal position; with cauda extending backward, 3.5 mm.; antenna 1.2 mm. Apparently black, the tibiae and tarsi piceous; wings hyaline, the stigma and radial vein pale brown. Head large, fully twice as wide as thick, its surface smooth, impunctate; malar space half the width of the eye, with a very distinct furrow; ocelli prominent, in a small triangle. Antennae rather stout; scape scarcely as long as the first flagellar joint which is about twice as long as thick and slightly, but not conspicuously narrower at the base than at the apex; second flagellar joint very slightly longer than the first; following imperceptibly shorter, the penultimate joint one-half longer than thick. Mesonotum rather narrow, the parapsidal furrows quite distinctly impressed on the anterior half. Propleurae not entirely smooth; with several striations along the anterior border, and also some shallow punctate impressions, more noticeable below; mesopleura with a crenate posterior margin. Sides of propodeum rugose-reticulate, without any smooth polished central area; upper surface apparently without any longitudinal carinae. Abdominal petiole extremely short, scarcely visible from above; base of the second segment coarsely striate on the sides, both above and below. Cauda long, only faintly curved, its sides nearly parallel, about seven times as long as wide near the base (44 : 6). Stigma more elongate than usual, the radial cell large; postmarginal vein three-fifths as long as the stigma; first section of

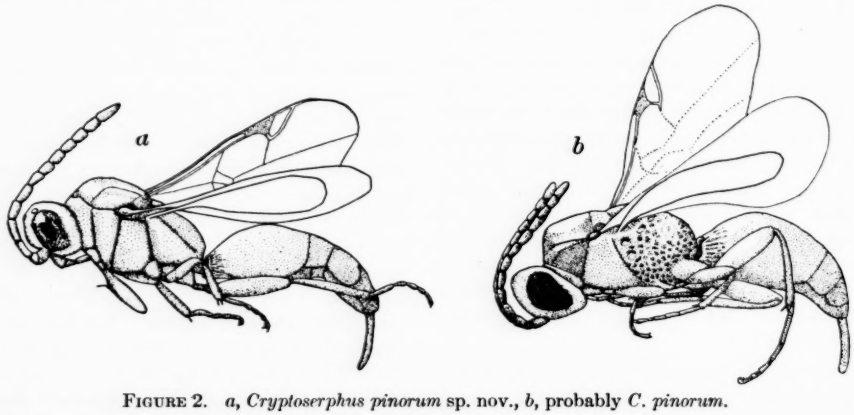

FIGURE 2. *a, Cryptoserphus pinorum* sp. nov., *b*, probably *C. pinorum.*

radius much thickened, half as long as the width of the stigma; second section not thickened, slightly curved on basal half and slightly divergent from the margin of the stigma. Legs long and slender; last joint of all the tarsi widened apically, but not strongly thickened; tarsal claws simple, without basal tooth.

Type: M. C. Z. No. 8257. Also two females in the collection of the Königsberg Museum, not so completely preserved, but almost certainly the same species, and further, another (No. 7841) most probably the same. Two other specimens are also included with considerable question as these are at least nearest to this species among those described.

Cryptoserphus hamiferus sp. nov.

(Fig. 1, *c* and *d*)

♀. Length 2.1 mm; cauda 0.45 mm. Black, the abdomen apparently rufous or reddish at the base and the legs brownish, especially the four anterior ones; wings hyaline, the stigma and veins reddish brown. Head broad, two and one-half times as wide as thick in vertical view; ocelli in a wide, low triangle, the posterior pair much further from one another than from the eye-margin. Surface smooth and impunctate above; face and clypeus with distinct small punctures, sparse medially and denser at the sides. Malar space shorter than the basal width of the mandible, with a sharp furrow. Antennae short, stout, distinctly thickened apically; scape scarcely longer than broad; first flagellar joint one-half longer than wide at the tip, considerably narrowed toward the base; joints beyond imperceptibly shorter, the penultimate one quadrate, slightly narrower basally, but no longer than the apical width. Thorax rather broad, the mesonotum no longer than its greatest width; parapsidal furrows sharply impressed on their anterior fourth. Pronotum above transversely striate; propleurae smooth, except for a few striae at the extreme lower corner. Propodeum rather finely and evenly rugosely reticulate on the sides, the upper surface not visible in the type specimen. Legs stout, all the femora and tibiae noticeably thickened; last joint of all tarsi not wider than the others, all the claws slender and without a basal tooth. Abdomen short, stout; without striae at the base, except for some very short ones at extreme base below; first segment extremely short, not at all visible from above. Cauda rather long and slender; basal two-thirds straight and only slightly narrowed; apical third sharply narrowed and arcuately curved downward to the tip. Radial cell with its costal margin about half as long as the stigma; first section of radius swollen, punctiform, the second section straight, strongly divergent from the apical margin of the stigma.

Type: M. C. Z. No. 8265.

This species may be recognized by the form of the cauda which is almost hooked at the tip.

Cryptoserphus tertiarius sp. nov.

(Fig. 1, *b*)

♀. Length 3.9 mm.; cauda 0.4 mm. Apparently entirely black; wings hyaline with dark brown stigma and venation. Head rather wide, the cheeks as wide as the eyes; malar space about as long as the width of the mandible at base, with a well developed furrow. Antennae slightly, but distinctly thickened apically; penultimate joint of flagellum quadrate, its length equal to its width; scape short, slightly longer than thick; first flagellar joint about one-half longer than thick, the following joints growing gradually shorter. Face and clypeus apparently not punctate, although not very clearly visible. Mesonotum with no clear indications of parapsidal furrows. Pronotum transversely striate above; propleura striate, except anteriorly near the middle. Propodeum long, not very sharply declivous behind; rather coarsely reticulate above; the sides obliquely striate, except for a large smooth area below the spiracle; a heavy crenate line on each side of the anterior propodeal suture above the middle coxa. Abdomen elongate, the second segment one-third longer than high in lateral view; petiole very short, not visible from above; cauda curved throughout its length, about three times as long as thick near the base. Legs rather stout; front tarsi with the apical joint not at all widened, its claws simple. Radial cell about half as long as the stigma along the costal margin; first section of radius rather short and thick; second section thin, straight.

Type: M. C. Z. No. 8272.

This species is similar to the preceding one, but differs clearly in the shape of the cauda and the conspicuous striation of the propleura. It is also very much larger.

Cryptoserphus obsolescens sp. nov.

♀. Length 3.2 mm.; cauda 0.43 mm. Entirely black, shining, except the tegulae which are

light brown, wings hyaline or slightly infuscated, the stigma and veins reddish brown. Head rather wide and thin when seen from above; the ocelli in a small triangle, the posterior pair at least as far from the eye as from one another; surface of head above and on the face and clypeus finely, sparsely punctate, the cheeks smooth. Malar space slightly shorter than the width of the mandible at base, with a sharply defined furrow. Antennae short, very little thickened apically; scape short and stout, scarcely as long as the first flagellar joint which is almost twice as long as wide at tip and very much narrowed toward the base; following joints gradually shorter, the penultimate one as long as wide. Pronotum medially rough, not clearly visible, but apparently not transversely striate. Mesonotum elongate, smooth, anteriorly with only shallow, weak indications of parapsidal furrows. Propleura smooth and shining, very strongly, obliquely concave; mesopleura smooth, except for some shallow longitudinal wrinkles near the the upper edge; its posterior margin with a crenate line. Propodeum coarsely reticulate on the posterior slope and the sides; upper surface apparently smooth. In the type this appears as though it might be due to a layer of occluded air, but the paratype shows the same absence of reticulation on this surface. Sides of propodeum with a large smooth area anterior to and below the spiracle. Petiole of abdomen extremely short, not visible from above; base of second segment with a few very short striae at the base above. Cauda short, a little less than twice as long as high at the base (30 : 17); curved downwards, more noticeably so toward the apex, especially on the dorsal side. Radial cell very short, forming an elongate area that does not extend all the way to the lower corner of the stigma. Legs rather stout, the femora and tibiae noticeably clavate; tarsal claws simple, the last tarsal joint not noticeably enlarged.

Type: No. XXB967; paratype Z128, both in the Königsberg Collection.

This species is most distinct on account of the extremely small radial cell as well as by the sculpture of the propodeum.

Cryptoserphus succinalis sp. nov.

(Fig. 3)

♀. Length 4.5 mm.; cauda 0.7 mm. Apparently entirely black, with the wings distinctly infuscated, especially in front. Head short, surface smooth or nearly impunctate; transverse; ocelli large, in a small triangle, the posterior pair considerably farther from the eye than from one another. Malar space short, with a sharply defined furrow. Antennae short, but not noticeably thickened; scape as long as the first flagellar joint, swollen apically; first flagellar joint much narrowed toward the base, more than twice as long as thick at apex (7 : 17); following joint much shorter; those beyond very gradually shorter, the penultimate one quadrate, or imperceptibly longer than thick. Thorax quite long and narrow in dorsal view, with shallow, poorly defined parapsidal furrows that extend nearly halfway to the scutellum and set off a narrow median lobe that is highly convex in front. Propodeum

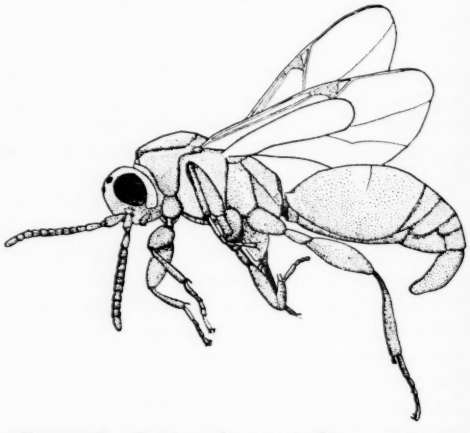

FIGURE 3. *Cryptoserphus succinalis* sp. nov., type specimen.

long above, the posterior slope sharply declivous; coarsely reticulate, with a smooth area below and anterior to the spiracle; propleura smooth, without striate sculpture. Legs stout, especially the front pair and the femora of the hind pair; last joint of front tarsi fully as long as the preceding two joints together; all tarsal claws simple. Abdomen with the petiole very short, not visible from above, second segment with poorly developed striae at the base, its ventral surface clothed with rather long sparse hairs, repeated as a tuft on the venter just before the cauda. Cauda rather stout at the base, evenly curved and narrowed to the apex. Radial cell triangular, its costal edge about half as long as the stigma.

Type: M. C. Z. No. 8274. Also six other specimens, none of them quite so well preserved, that are probably the same species. No. XXB372 in

the Königsberg collection is the best of these and is I believe without question cospecific. Of the others, three belonging to the Königsberg series and two to the M. C. Z. are probably this species.

Most remarkable of all is a block of amber about 33 mm. long, 9 mm. wide and 8 mm. thick which contains a swarm of serphids that seem to belong to this species. These are massed together and so tangled and overlain that it is possible only to estimate the number of specimens in the group.

FIGURE 4. Amber block containing aggregation of some 50 specimens, probably *Cryptoserphus succinalis*.

All seem to be females and there are certainly more than fifty altogether. As the crowding is greatest along one side and at one end the number originally must have been much greater. In spite of the large series, it is impossible to view any of them clearly enough to make sure of the specific determination.

I have never seen any comparable swarm of serphids, nor have I seen any accounts of similar aggregations among living species of this group. What may have been the cause of this occurrence in the Oligocene pine forest must remain for the present uncertain.

2. A New Living Genus of Serphidae from Formosa

I have had in my collection of Serphidae for a number of years a remarkable undescribed genus from Formosa. It is represented by only two male specimens, in neither of which are the antennae complete and I have delayed any attempt to describe it in hopes that better material might fall into the hands of some interested entomologist. Meanwhile, Dodd has described two genera from Australia, *Acanthoserphus* and *Austroserphus*, even more unusual than the Formosan genus. Both of Dodd's genera are more generalized than other Serphidae in possessing a much more complete wing venation, but both are highly modified, especially *Acanthoserphus* which has the prothorax and postscutellum spined and the mandibles greatly reduced or absent. In *Austroserphus* the antennal scape and vertex are peculiarly modified and the abdomen has a long petiole in the male. Both, however, possess 13-jointed antennae and in the general structure of the body are without the slightest question true Serphidae. The present genus is close to the very uniform series of other genera known from widespread points throughout the world, although the head and thorax are greatly modified and the antennae have more than thirteen joints which is the number always present in all the other known genera of the family.

Nothoserphus gen. nov.

♂. Head wide, and very thin antero-posteriorly, three times as wide as long in dorsal view; at the sides, between the eyes and occipital foramen, fully four times as wide as long; in facial view the head is slightly wider than long, much narrowed below the eyes. Clypeus transverse, with deeply impressed lateral foveae, convex, its lower margin with reflexed margin that extends as a marginal carina along the posterior edge of the malar space almost to the eye; mandibles concealed beneath the clypeus, but the palpi are long and projecting. Antennae with more than 13 joints (all lack the tips, but I suspect from the form of one with 13 joints that the complete antenna may probably be 14 or 15-jointed), inserted well above the clypeus, just above the lower margin of the eyes; scape small, pedicel very short; flagellum filiform, slender, joints of approximately equal length, but thinner toward the apex of the antenna. Vertex sharp above, forming a straight transverse edge which bears a rounded, blade-like

elevation on each side external to which the posterior ocelli lie; between these elevations is a deep semicircular excavation; ocelli large, in a triangle. Occipital margin narrowly reflexed. Thorax short; pronotum with the humeri angularly elevated; mesonotum with parapsidal furrows meeting before the scutellum and with similar furrows near the sides; scutellum raised, but not spined, with a deep basal impression. Propodeum much narrowed behind, reticulate, but without any longitudinal carinae. Petiole of abdomen short, scarcely visible above as in *Cryptoserphus;* second segment long, almost entirely covering the abdomen; tip of abdomen bispinose as usual. Wings ample; venation as in *Serphus,* with a large triangular stigma and short radial cell, but without discal venation. Legs slender; claws of front tarsi with a fleshy lobe at the base.

Type: *N. mirabilis* sp. nov.

In spite of the unusual form of the antennae I think that *Nothoserphus* must be placed in the Serphidae, particularly on account of the wing venation and the form of the abdomen which do not depart in the least from the typical members of the family.

Nothoserphus mirabilis sp. nov.

♂. Length 3.5–4 mm. Body entirely black and shining; antennae pale brownish at the base, third and fourth joints darker, remainder black; tegulae dark brown; legs beyond the coxae pale honey yellow, the tips of the hind tibiae infuscated; wings tinged with brownish, below the stigma with a diffuse brown cloud, the stigma and veins deep brown. Head very highly polished, especially on the front and the posterior surface. Ocelli in a curved line or low triangle, the posterior ones lying just external to the elevated lobe on the vertex close to its sharp upper edge. The elevated lobes are so thin that their edges are broken in one specimen. Front nearly flat, the orbits vertical, clypeus highly convex medially. First flagellar joint slightly more than three times as long as thick; following very little shorter and thinner, retaining about the same proportions. Head bare above, sparsely hairy below the antennae. Pronotum vertical, with a large fovea on each side of the median line and some smaller crenate sculpture, its upper angles elevated a blunt tooth, behind which the pleura is sparsely hairy. Mesonotum smooth, slightly wider than long, parapsidal furrows deep, transversely striate, entering two approximated shallow depressions well in front of the scutellum; lateral grooves coarsely crenate, extending just to the tegulae; median lobe very convex, tapering to a point behind, as wide as long. Scutellar groove wide and deep, enclosing three pits, disc sharply convex. Metanotum irregularly, coarsely striate. Propodeum elongate, evenly narrowed, coarsely reticulated, the posterior dorsal face small, slightly concave, but not separated by distinct carinae; basally above with a broad, shallow median impression. Propleura vertically excavated, its surface shallowly, very irregularly, confluently wrinkled or pitted; mesopleura smooth with a large shallow impression near the middle and a crenate submarginal line behind. Petiole of abdomen as long as high, but shorter above so that it appears much shorter than wide in dorsal view, coarsely and irregularly sculptured; second tergite with a single groove or broad stria medially at the base that extends to the basal fourth; otherwise polished and entirely smooth except for a broad apical band of very small, sparse punctures; sides of the compressed third segment similarly punctate. Stigma large, triangular, radial cell small, its costal edge less than half the length of the stigma; first section of radius practically wanting, the straight second section enlarged at the base which is contiguous with the stigma.

Type and paratype from Taihorin, Formosa, July 7, 1911 (H. Sauter).

CALLICERATIDAE IN BALTIC AMBER

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Received: June 6, 1939. Presented: May 10, 1939.

Up to the present time no members of this family of parasitic Hymenoptera have been described from the Baltic amber, although a single species is known from the Cretaceous amber of Canada.

The material at present in my hands includes altogether almost fifty specimens among which I have been able to recognize the five species which are described on the following pages. This material comes in part from the Haren collection belonging to the Museum of Comparative Zoölogy at Harvard University and in part from specimens loaned me for study by the University of Königsberg.

The family Calliceratidae includes about 500 recent species distributed in something over twenty genera. These are divided into two distinct subfamilies on the basis of the form of the stigma. This is linear in the typical subfamily Calliceratinae of which there are two species in the amber, and triangular in the Megaspilinae of which three amber species are described in the present paper.

Subfamily Calliceratinae

Lagynodes Förster

There are in the present material two species that I have referred to this living genus which is known to be widely distributed in the Palaearctic region. As in the living species they are dimorphic, the males being alate and the females completely apterous. The males of the fossil species seem to be fairly typical, except that the stigma is distinctly incrassate, at least twice as thick as the apex of the submarginal vein, whereas in the several living species the stigma is clearly linear and not noticeably thicker than the submarginal vein. The females show a more complete development of the short, dorsal, impressed lines on the second tergite of the abdomen so that these outline a complete trident rather than the M-shaped series of lines that are present in the living forms. Another characteristic is the larger mesonotum; this is very greatly reduced in the living species and although small in the two fossil ones the reduction has obviously not progressed so far. Taken together the several differences seem to indicate very clearly that the Oligocene forms are close to the recent genus *Lagynodes*, but more generalized and quite possibly nearly in the line of origin of the present-day species.

The two amber species may be separated as follows:

1. Wings present, fully developed (males).....2.
   Wings entirely wanting (females).....3.
2. Very small species; length 0.7 mm.
   L. primordialis sp. nov.
   Larger species; body at least 0.85 mm. in length.
   L. electriphilus sp. nov.
3. Length 1.0 mm.....*L. primordialis* sp. nov.
   Length 1.25 mm.....*L. electriphilus* sp. nov.

Lagynodes primordialis sp. nov.

(Fig. 1 and Fig. 2, *a* & *b*)

♂. Length 0.75 mm. Apparently entirely black, including the legs; wings hyaline with piceous venation. Head above smooth or slightly punctulate, the ocelli forming a small triangle on the vertex. Eyes rather large, widely separated above by three times the width of the ocellar triangle, but extending down well toward the mandibles so that the malar space is less than one-fourth the width of the eye. Antennae inserted high on the head, at about the middle of the eye; scape slender, about three times as long as wide, barely shorter than the pedicel and first flagellar joint combined; pedicel slightly longer than wide and two-thirds as thick as the scape; first flagellar joint three times as long as thick; following gradually shorter, except for the longer apical joint. Mesonotum smooth and subshining, with parapsidal furrows and a complete median groove; these are thinly and finely impressed, but very distinct; the parapsidal furrows are not very widely separated and weakly

convergent behind so that they are separated at the base of the scutellum by half the distance that separates them on the anterior part of the mesonotum; posterior suture of mesonotum marked by a very fine, sharp line. Scutellum convex, polished, separated from the axillae by a straight, crenate line which bears a deep punctate impression at its outer end. Propodeum very short in dorsal view, longitudinally rugose. Abdomen apparently with several short basal carinae, although these are obscured in the type, length of the tergites not clearly visible. Legs slender, but with the femora distinctly clavate.

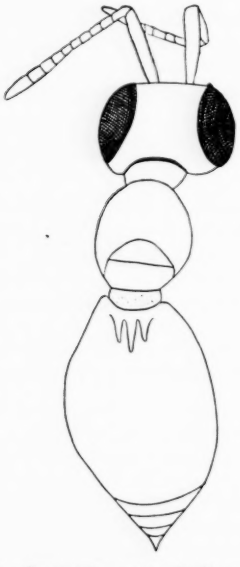

FIGURE 1. *Lagynodes primordialis* sp. nov. ♀

Wings with a long marginal fringe apically; marginal vein linear, short, slightly, but not conspicuously widened at tip; radial (stigmal) vein short, slightly curved, leaving more than half of the cell open at apex.

♀. Length 1.0 mm. Completely apterous. Color apparently dark brown or piceous, but in one or two specimens noticeably lighter, especially on the legs. Head rounded, not noticeably extended at the insertion of the antennae; front and vertex quite evenly convex, the surface finely shagreened; cheeks and temples shining, sparsely punctulate; clypeus with a rather sharp median impression. Eyes comparatively large for the genus, about twice as long as the malar space, elongate oval; vertex sharply excavated and with a raised marginal line. Antennae 11-jointed; scape long, thick, of uniform width, more than half as long as the following joints together; flagellum noticeably thickened apically, the joints about quadrate, except the last which is conical and about twice as long. Thorax above smooth or minutely shagreened. Prothorax very much elongated above; exclusive of the anteriorly contracted neck, it is about as long as the remainder of the thorax; mesonotum reduced to a small plate, about twice as wide as long, that does not extend quite to the sides of the thorax, its anterior margin arcuate, the posterior one straight.

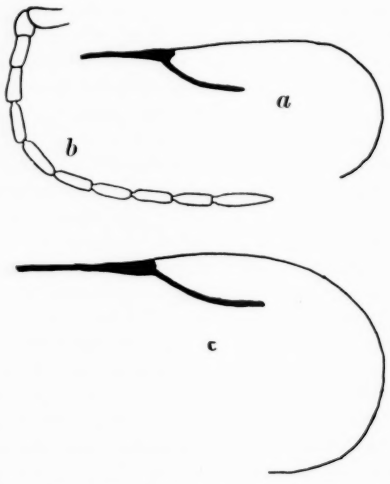

FIGURE 2. *a*, *Lagynodes primordialis* sp. nov., tip of wing of male; *b*, antenna of same; *c*, *Lagynodes electriphilus* sp. nov., tip of wing of male.

Scutellum transverse, nearly as long as the mesonotum; propodeum visible from above only as a nearly linear band. Second tergite covering most (about three-fourths) of the abdomen; the following segments very short, slightly decreasing in length; entire surface smooth, the second tergite at the base with three V-shaped elevations, each one slightly raised and marked off by finely impressed lines each of which ends in a large puncture or fovea at the base. This trident-like elevation has the three parts each acutely lanceolate distally and they are contiguous basally. Femora thickened, their tibiae clavate.

Type ♀, No. 9793, Museum of Comparative Zoölogy. Three paratypes from the University of Königsberg, one of them numbered 206. Two allotype males, one in the Königsberg collection

and the other in the Museum of Comparative Zoölogy, No. 9794.

Lagynodes electriphilus sp. nov.

(Fig. 2, *c*)

♂. Length 0.85–1.0 mm. Body brown or piceous; the legs lighter, fuscous or brown, the specimens varying but none appearing entirely black as preserved. Wings hyaline, the venation dark brown. Head above shining, scarcely punctulate; ocelli large, in a small triangle, the posterior pair occupying less than one-third of the width of the front between the eyes. Malar space short, about one-third as long as the width of the eye. Antennae long and slender, inserted at the level of the middle of the eye; scape thicker apically, three times as long as wide; pedicel one-third as long, more or less globular; first flagellar joint nearly as long as the scape which is not so long as the pedicel and first flagellar joint combined; following joints shorter and subequal, except for the longer apical one. Mesonotum not distinctly sculptured, with the parapsidal furrows and a median groove disposed as in the preceding species, although the mesonotal lobes and scutellum appear to be more strongly convex and the basal groove of the scutellum more deeply impressed laterally. Propodeum short, rugose. Abdomen highly polished, the second tergite occupying two-thirds the entire dorsal length. Legs slender, the femora slightly thickened, the tibiae very slender basally. Wings with the marginal vein slightly widened apically; radial vein complete to beyond its basal half so that the cell is open for slightly less than its apical half.

♀. Length 1.25 mm. Completely apterous. Very similar to the female of the preceding species and associated with the males of the present species mainly on account of its size which is in the single specimen larger than the several females of *L. primordialis*, which vary practically not at all in the present series. This difference in size is one of the differential characters among the males of the two species. Color as preserved, brownish, very clearly pale and probably more or less ferruginous or fulvous in life. Eyes very coarsely hairy (probably so in both species, but not visibly preserved in *L. primordialis*). Head above closely, minutely punctate, the thorax above more conspicuously so, otherwise structurally similar to *L. primordialis*. Abdomen coarsely, conspicuously hairy. Trident-like ridges at base of second tergite shorter, the median one not as long as the mesonotum and scutellum together. The depressed areas between the ridges deeply impressed basally, but the excavation is not set off as a distinct fovea.

Type ♂, in the Collection of the Königsberg Museum which contains also six other male specimens. Allotype ♀, a single specimen in the collection of the Museum of Comparative Zoölogy, No. 9795; no further females.

It is possible that I have not associated the females of the two apterous species correctly as there are no really clear differences except for size. The males are, however, quite obviously separable into two distinct species.

Subfamily MEGASPILINAE

Conostigmus Dahlbom

Three amber species in the present collection are referable to this genus. They agree closely with the recent members which are numerous and widespread throughout the Holarctic region. The stigma in the wings appears to be narrower in all the fossil forms than in any living species with which I am familiar, but otherwise the amber forms seem to be quite typical. The abundance of members of this genus in Baltic amber is especially interesting in view of the fact that a species tentatively referred to the related *Lygocerus* has been described by the writer from the earlier Cretaceous amber of Manitoba.[1] They may be distinguished by the following key.

1. Very small species, female 0.74 mm. in length; joints near the middle of the flagellum no longer than wide ..... *C. juvenilis* sp. nov.
   Larger species, females at least 1.1 mm. in length . . 2.
2. Antennae stout throughout; middle joints of flagellum (♀) quadrate, not longer than thick; pedicel and first flagellar joint not elongated, the latter less than twice as long as thick. *C. succinalis* sp. nov.
   Antennae more slender, especially at the base of the flagellum; middle joints longer than thick; pedicel and first flagellar joint much elongated, each more than twice as long as thick . *C. resinae* sp. nov.

Conostigmus juvenilis sp. nov.

(Fig. 3)

♀. Length 0.74 mm. Apparently black, with the abdomen and the base of the antennae brownish; wings hyaline, the stigma and venation

[1] Univ. of Toronto Studies, Geol. Ser., No. 40, p. 43, 1937.

rather light brown, although obviously faded in the type specimen. Head smooth and shining. Eyes comparatively small, much higher than wide, without any visible hairs. Cheeks and lower part of temples very broad, fully equalling the width of the eye. Ocelli large, in a very small triangle. Antennae 11-jointed, the scape extending to the level of the top of the eyes, as long as the following five joints taken together; pedicel nearly twice as long as thick near apex, narrowed basally; first flagellar joint much shorter than the pedicel and thinner; second and following joints of flagellum growing broader and slightly longer toward apex, all of them clearly longer than wide; last joint gradually tapered to a point, twice as long as the preceding one. Mesonotum highly convex, almost gibbous medially in front, with three deep furrows that meet behind barely before the scutellum. Axillae triangular, more acute inwardly, apparently not quite meeting on the median line; disc of scutellum shining, feebly convex. Propodeum above finely rugose-reticulate. Petiole of abdomen very short; second segment smooth, with a marginal carina and a series of large closely placed punctures at the base, but without any basal striae or grooves; abdomen narrow, about two and one-fourth times as long as broad, gradually attenuated from near the middle to the narrowly acute apex. Stigma only moderately wide, about twice as long as broad, convex below, but more or less narrowed basally, the distal margin also convex; basal two-thirds of radial vein complete, leaving the apical third of the radial cell open.

Type and paratype in the Collection of the Königsberg Museum, the type without number and the paratype numbered 11,036.

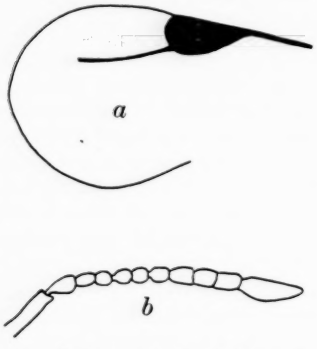

FIGURE 3. *Conostigmus juvenilis* sp. nov., male. *a*, tip of wing; *b*, antenna.

Conostigmus succinalis sp. nov.
(Figs. 4 & 5)

♀. Length; type 1.6 mm., other specimens 1.1 mm. to 1.7 mm. Apparently entirely black; wings subhyaline, with very dark stigma and veins. Head large, rounded, surface shallowly punctulate or shagreened on the front and vertex; front between the eyes not occupying quite one-half the width of the head; ocelli in an equilateral triangle, separated by somewhat less than the distance between the lateral ones and the eye margin. Eyes coarsely granulated, apparently not hairy; large, several times wider than the cheeks which are much broader than the lower part of the temples; surface of head behind the eyes smooth and polished. Antennae 11-jointed, very stout; scape long and stout; pedicel and first antennal joint not elongated, the latter less than twice as long as thick; following joints all barely longer than thick, the apical one elongated and pointed as usual. Thorax shining, its upper surface minutely punctate or slightly shagreened. Median suture and parapsidal furrows finely, but very sharply impressed as lines of closely set punctures; the suture between the mesonotum and axillae is a fine, impressed, non-punctate line; scutellum separated from the axillae by a sharply punctate line on each side, the inner angles of the acutely triangular axillae meeting in a point on the median line. Surface of scutellum very minutely punctate-reticulate, its apex margined by a punctate frenum. Propodeum sharply, irregularly reticulate; with a series of very short and closely placed longitudinal ridges at apex. Base of abdomen longitudinally fluted with the dorsal grooves extending at least to the

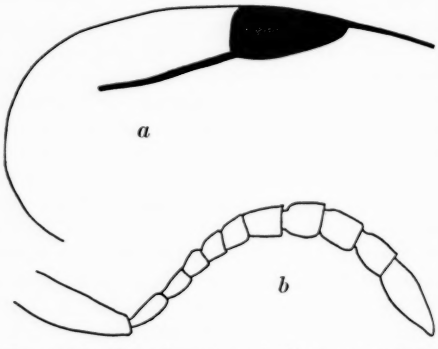

FIGURE 4. *Conostigmus succinalis* sp. nov., female. *a*, tip of wing; *b*, antenna.

basal third of the second tergite which occupies about one-half the length of the abdomen; following segments subequal; body of abdomen broad, not much more than twice as long as wide.

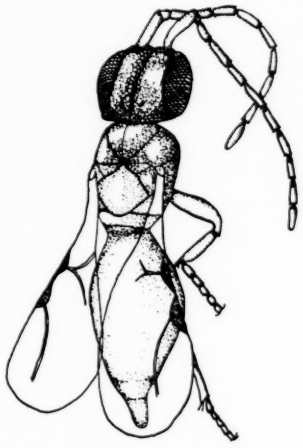

FIGURE 5. *Conostigmus succinalis* sp. nov., male.

Legs stout, the front and hind femora strongly thickened. Stigma about twice as wide as long, subtriangular, with the posterior and apical margins slightly convex; radial vein extending two-thirds of the distance to the margin of the wing, leaving the apical third of the radial cell open.

Type, No. XXB1349, University of Königsberg Museum and two other females designated as paratypes, one in the Königsberg Collection and the other, No. 9796 in the Museum of Comparative Zoölogy. Seven other specimens are probably this species also although these are not so well preserved.

Conostigmus resinae sp. nov.

♀. Length 1.6 mm. Apparently entirely black; possibly with the legs pale although this seems to be due to a bleaching of these in the type specimen; wings hyaline. Very similar in most characters to the preceding species. Head smooth and shining. Antennae with the pedicel narrow, although thicker distally, fully three times as long as wide; first flagellar joint slightly more than twice as long as thick; following joints shorter and decidedly thicker beyond the third joint, the apical ones more than twice as thick as the first flagellar joint and all longer than wide. Mesonotum smooth, the middle lobe highly convex in front; parapsidal furrows approaching the median furrow at an angle of about 45° but reaching the posterior margin at a point well separated from the median line. Second tergite of abdomen extending about half way to the tip; smooth, without striae or grooves at the base. Stigma more than half as wide as long, more or less triangular, but with the lower and outer sides distinctly convex; radial vein long, extending fully two-thirds the distance from the stigma to the wing margin, of uniform thickness throughout.

Type in the Königsberg collection. It is not so well preserved as might be wished, but is evidently distinct from the other specimens before me.